MISSION RESTORATION PROJECT

Revised Preliminary Environmental Assessment

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Chapter 1: Purpose and Need

1.1 Introduction

This revised preliminary Environmental Assessment (EA) describes a USDA Forest Service proposal to authorize landscape restoration, wildfire hazard reduction, and transportation system management activities in the Mission Restoration Project area on the Methow Valley Ranger District of the Okanogan-Wenatchee National Forest. The Forest Service has prepared this revised Environmental Assessment (EA) in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations. Supporting documentation, including more detailed analysis of project resources, may be found in the project planning record located at the Methow Valley Ranger District Office in Winthrop, Washington.

Revised Preliminary Environmental Assessment

Revised Preliminary Environmental Assessment

Since the preparation of the initial preliminary EA, clarification was received on addressing the 2012 Planning Rule as amended (Planning Rule; 36 CFR 219). This project proposes an amendment to the Okanogan National Forest Land and Resource Management Plan (Forest Plan; USDA 1989), and the Planning Rule requires an assessment of how amendments relate to the substantive provisions identified in the 2012 Planning Rule (36 CFR 219.8 – 219.11). This revised preliminary EA addresses the Planning Rule substantive provisions and will undergo a comment period to receive public input on this process; comments already received during the scoping period and previous comment periods will also be considered and do not need to be resubmitted. In addition, the EA discloses the direct, indirect, and cumulative environmental effects that would result from the Proposed Action, No Action, and an Alternative that includes increased Aquatics Restoration measures. Federal actions such as the authorization to manage vegetation must be analyzed to determine potential environmental consequences pursuant to the National Environmental Policy Act of 1969 (NEPA). The Council on Environmental Quality regulations define an environmental assessment as a concise public document that includes brief discussions of the need for the proposal, of alternatives to the proposal, of environmental impacts of the proposed action, and a listing of agencies and persons consulted (40 CFR 1508.9).

1.2 Project Area Location

The Mission Restoration assessment area is found west and south of Twisp and includes portions of Township 32 North, Ranges 19, 20, 21, and 22 East and Township 33 North, Range 20 East, Willamette Meridian. The Mission Restoration assessment area is principally the Libby Creek and Buttermilk Creek drainages including Smith Canyon, Elderberry Canyon, Ben Canyon, Chicamum Canyon, Mission Creek, Black Pine Creek, Nickel Canyon, and Hornet Draw. The project area also includes a small portion of the Twisp River watershed that was added at the request of adjacent private land owners to reduce wildfire hazards on National Forest lands adjacent to private lands, bringing the project size to approximately 50,200 acres. See Figure 1, Mission Restoration Project Area Vicinity and Sub-Watersheds Map.

1.2.1 Maps and Acres Precision

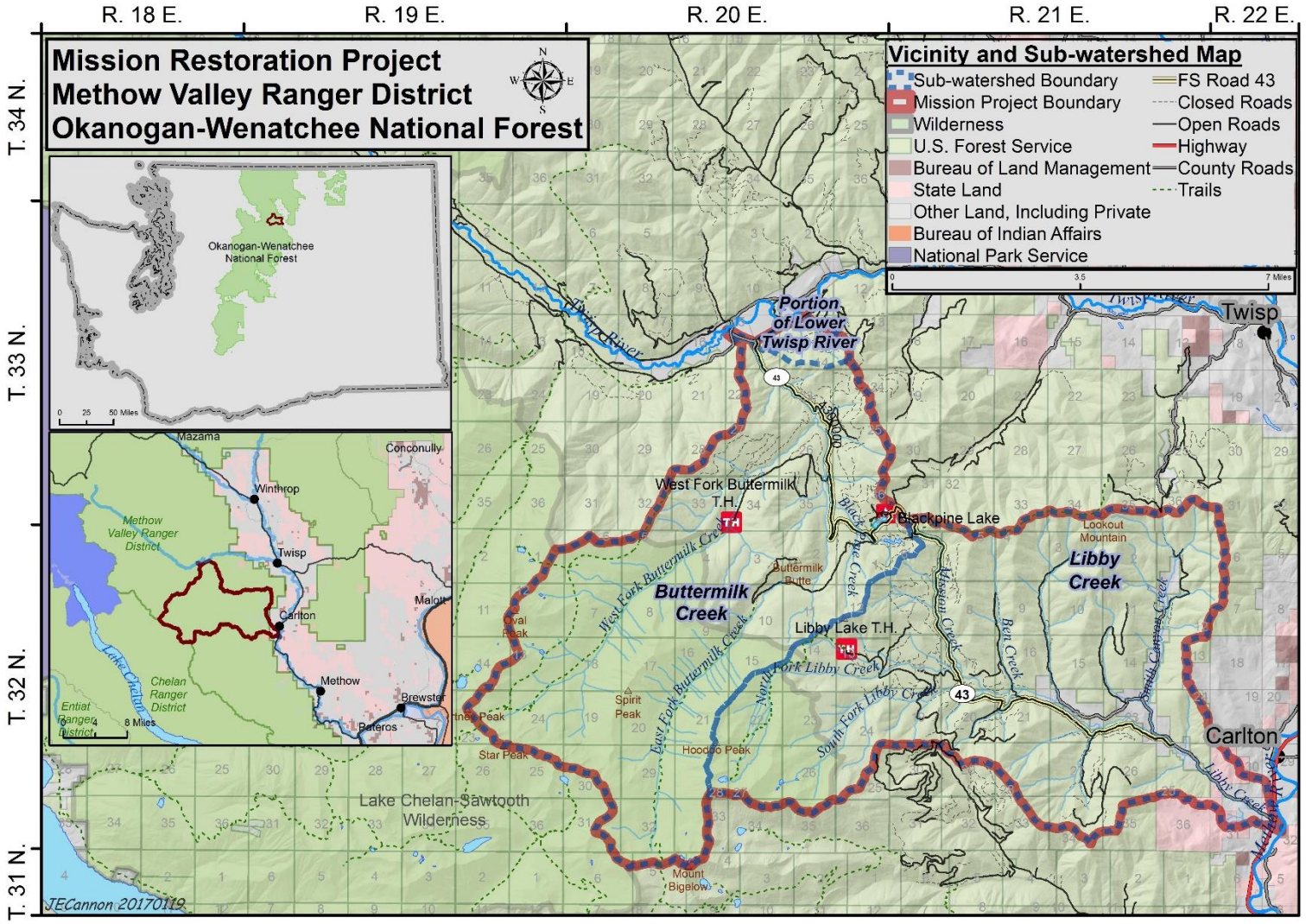
All map boundaries and acreage figures are approximations based on best available information at the time (gross acres). Actual implementation may differ slightly to better reflect on the ground conditions (net acres). Actual implementation is likely to include fewer acres of treatments.

1.2.2 Analysis Process

The intent of this project is to evaluate the analysis area and prescribe and implement a set of treatments that rely on the principles of landscape and stand-level restoration ecology, wildfire hazard reduction, and transportation system management while meeting the direction of the amended Okanogan National Forest Land and Resource Management Plan and the forest Restoration Strategy, to the extent feasible. Field review, professional expertise, public input, and several analysis methods were used by interdisciplinary team (IDT) members to assess current conditions, determine needed changes, and evaluate effects of proposed treatments. IDT members compared the existing condition to desired conditions that are consistent with the amended Okanogan National Forest Land and Resource Management Plan (Forest Plan) and other guidance. The IDT also considered changing climates by emphasizing the restoration of natural processes, functions, and patterns across the landscape to build more resilient ecosystems that would be responsive to projected changes in climate. One analysis tool used by interdisciplinary team members in this project was the Ecosystem Management Decision Support (EMDS) modeling tool (EMDS; Hessburg 2013). This tool used photo-interpreted data supported by field verification and professional expertise to compare existing vegetation conditions to both historic reference conditions and to likely future conditions (given conservatively-estimated changes in climate). The EMDS tool evaluated the Libby and Buttermilk Creek sub-watersheds separately, showing where vegetation characteristics and processes such as stand structure and crown fire risk were outside of the desired range of values, and helped set priorities for where vegetation-related restoration actions should occur. Wildlife habitat for selected focal wildlife species was analyzed based on field data because EMDS results predicted habitat characteristics that were inconsistent with what was observed in the project area. The need for aquatic and soil restoration treatments was based on field verification of impacts from past forest management practices. Proposed changes in the transportation network were developed during an interdisciplinary Minimum Roads Analysis.

Proposed treatments would re-establish ecological processes, patterns, and functions to restore the Libby and Buttermilk Creek landscapes to be more resilient to disturbances such as wildfire and changing climates, reduce wildfire hazards in the Wildland Urban Interface (WUI), and manage the existing transportation system. Specialists identified proposed treatment areas by isolating areas of contiguous departure, similar vegetation, forest type (dry, mesic, or wet), logical topographic boundaries, and areas of operational functionality (e.g. roads, ridges, or other barriers that could be used as prescribed fire containment boundaries). The methods above and other analysis processes used in this assessment are described further in Chapter 3 and in resource specialist reports.

Figure 1. Mission Restoration Project Vicinity and Sub-Watersheds Map



1.3 Purpose and Need for Action

Based on the analysis process described above, the following needs (P&N) were discovered that in turn influenced the purposes of this project:

1.3.1 P & N #1 – Hydrologic Function and Aquatic Habitat

Several roads add sediment, increase the drainage network, block fish migration, and reduce woody debris recruitment in the project area. Large wood, spawning habitat, and/or pool habitat are currently below desired conditions for ESA listed fish species (USDA, USDC, and USDI 2004) and in small headwater streams within the project area. In comparison to the desired condition, some drier drainages have stands of conifers that shade out hardwoods and reduce the amount of water available for stream flow. These conditions also make some riparian areas more susceptible to uncharacteristic harmful effects caused by wildfires. Road construction, conifer encroachment, and past vegetation management practices have reduced water flow and wetland habitat.

A purpose of this project is to restore and maintain aquatic and hydrologic processes impacted by management, improve habitat for Threatened and Endangered aquatic species, and increase watershed resiliency to existing and anticipated disturbances.

1.3.2 P & N #2 – Soil Productivity

Soil compaction in the project area limits native plant growth, reduces soil biological activity and water infiltration, limits soil productivity, and reduces the resiliency of plant communities to climactic and biological changes over time.

A purpose of this project is to restore soil-related processes and functions where past management practices have created detrimental effects.

1.3.3 P & N #3 – Vegetation Composition and Structure

Past management practices, including fire suppression, changed forest vegetation structure, overstory and understory species composition, and spatial patterns in comparison to historical conditions. These changes include a large increase of densely-stocked stands with multiple canopy layers or closed canopies with a high proportion of young shade-tolerant tree species (including Douglas-fir and subalpine fire in the dry forest type and subalpine fir in the moist forest type). These densely stocked stands tend to be arranged in a more continuous or unbroken pattern across the project area compared to historical conditions. Dry and moist forest stands with lower tree stocking levels and open canopy closure have decreased in total area and patch (stand) size compared to historic levels. Dry and moist forest stands comprised primarily of large trees also have decreased in total area and patch size compared to historic levels. Portions of the project area are susceptible to dwarf mistletoe infection, defoliating insects, and bark beetle attacks due to vegetation composition and structure changes from historical conditions. The risk of crown fire initiation and spread and associated fire effects are greater than historical conditions, particularly in the Buttermilk watershed, due to increased tree density and development of forest stands with multiple and closed canopy layers across the landscape. Dry and moist forest vegetation in the project area is susceptible to increased frequency and severity of natural disturbances (including insects, disease, and fire) associated with warmer, drier climate.

A purpose of this project is to maintain and restore forest vegetation characteristics to within estimated historical and future ranges of variability to improve forest resiliency to insect, disease, and wildfire events.

1.3.4 P & N #4 – Wildlife Habitat

Northern spotted owl habitat is limited and scattered in the project area compared to historical conditions, and habitat connectivity to suitable habitat outside of the project area is fragmented from past management actions. Meadow habitat around Mission Pond and Black Pine Meadows is shrinking due to conifer encroachment. The amount of large-tree habitat that provides nesting and foraging opportunities for northern goshawk, white-headed woodpeckers, western gray squirrels, and other species in the project area is below desirable levels. Existing early-successional conifer and deciduous stands is under-represented based on historical conditions, providing less quality habitat for lynx and their prey.

A purpose of this project is to develop, maintain, and/or enhance habitat for federally listed and other wildlife species and reduce the risk of large-scale habitat loss to fires by increasing resilience of habitats to wildfire.

1.3.5 P & N #5 – Sensitive Plants and Unique Habitats

Conifer encroachment in the project area has decreased nutrient, water, and sunlight availability to moonworts, bladderworts, and aspen.

A purpose of this project is to maintain and enhance existing and potential Region 6 Sensitive Survey and Manage plant populations and unique plant habitats within meadows and aspen stands.

1.3.6 P & N #6 – Wildfire Hazard in the Wildland Urban Interface

Current fuel conditions near and adjacent to private lands support flame lengths that increase the likelihood of crown fire initiation, placing life and property at risk and limiting direct suppression opportunities. Current fuel loading and stand structure along portions of Forest Roads 4300 and 4340 may create high-intensity fire conditions that limit the usefulness of these roads as firelines or evacuation/access routes during wildfires.

A purpose of this project is to modify the structure, composition, and patterns of forest stands within and adjacent to the wildland/urban interface (WUI) as defined by the 2013 Okanogan Community Wildfire Protection Plan, enabling the use of more direct firefighting strategies to protect life and personal property.

1.3.7 P & N #7 – Transportation System

Existing undersized culverts present risk for road failure and sediment delivery to streams. Road surfaces have poor drainage and have lost durable road surface which contributes to the potential for road failure and increased maintenance needs. Several roads do not meet current safety or design standards or are now surplus to management needs because of changes in logging system practices or management objectives. The existing road network costs more to maintain than is available in road maintenance funding.

A purpose of this project is to provide the road system needed for safe and efficient travel, administration, public use, and protection of natural resources on National Forest System (NFS) lands.

1.4 Management Direction and Guidance Pertinent to the Mission Assessment Area

1.4.1 Management Direction

The project is tiered to the Okanogan National Forest Land and Resource Management Plan (ONFLRMP or Forest Plan) and Final Environmental Impact Statement (USDA 1989) as amended by the Final Supplemental Environmental Impact State on Management of Habitat for Late-Successional and Old-Growth Forest Related Species within the Range of the Northern Spotted Owl Record of Decision (USDA and USDI 1994) and the Pacific Northwest Regional Invasive Plant Program Record of Decision (USDA 2005). Figure 4 displays the Forest Plan, NWFP, and IRA designations in the project area.

Forest Plan

The Forest Plan allocates the analysis area to several zones called Management Areas (MAs) with specific emphases, including Management Areas 5, 14, 15B, 17, 25, and 26 (see Figure 2 and 4). Approximately 4% of the project area lies outside of NFS lands and therefore has no MA designation. Specific Forest Plan Standards and Guidelines that apply to this project are in the Regulatory Framework listed in Appendix G and identified in resource specialists reports located in the project record.

Figure 2. Forest Plan Management Area Allocations in Project Area

Management Area	Goal	Percent of Project Area
MA5	Provide opportunities for recreation and viewing scenery in a roaded natural setting with a visual quality objective of retention or partial retention.	11%
MA14	Provide a diversity of wildlife habitat, including deer winter range, while growing and producing merchantable timber.	22%
MA15B	Maintain an extensive unmodified pristine environment within designated wilderness with a variety of trail opportunities	31%
MA17	Provide a variety of developed recreation opportunities in a roaded setting.	<1%
MA25	Intensively manage the timber and range resources using both even-aged and uneven-aged silvicultural practices. Manage to achieve a high present net value and a high level of timber and range outputs while protecting the basic productivity of the land and providing for the production of wildlife, recreation opportunities and other resources.	30%

MA26	Manage deer winter range and fawning habitats to provide conditions which can sustain optimal numbers of deer indefinitely, without degrading habitat characteristics such as forage, cover, and soil.	2%

Northwest Forest Plan

The Forest Plan was amended in 1994 by the Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl, hereafter referred to as the Northwest Forest Plan or NWFP (USDA and USDI 1994). The NWFP created additional management designations and goals that overlie the Forest Plan management areas described above, including the Aquatic Conservation Strategy with objectives for managing riparian features. The NWFP created additional management designations and goals that overlie the Forest Plan management areas described above, including the Aquatic Conservation Strategy with objectives for managing riparian features. Riparian Reserves overlap all NWFP designations to some extent, therefore the total percentage of lands with the NWFP designations in Figure 3 exceeds 100%. The standards and guidelines from the Okanogan LRMP apply where they are more restrictive or provide greater benefits to late successional forest-related species than other provisions of NWFP standards and guidelines. Figure 3 and Figure 4 describe the NWFP management areas, goals, and their overlap with the Forest Plan in the project area.

Figure 3. NWFP Management Area Allocations within the Project Area

Management Area	Goal	Overlap with Forest Plan	Percent of Project Area
Congressionally Reserved	In this project, manage this NWFP MA as wilderness.	Same as MA15B (Lake Chelan-Sawtooth Wilderness)	31%
Late-Successional Reserves	Manage to protect and enhance conditions of late-successional and old-growth forest ecosystems, which serve as habitat for the late-successional and old-growth related species including the northern spotted owl.	Overlaps Forest Plan MAs as follows: • MA 5: contains 106 acres of the Twisp River LSR. • MA 25: contains 2338 acres of the Sawtooth LSR.	5%
Matrix	Allow for timber harvest and other silvicultural activities in suitable forest lands with emphasis on green tree and snag retention.	Overlaps all Forest Plan MAs outside of Wilderness as follows: • MA 5: 5250 ac • MA14: 10,979 ac • MA 17: 38 ac • MA25: 12,486 ac • MA26: 1163 ac	60%
Riparian Reserves:	Riparian-dependent resources receive primary emphasis in areas adjacent	Overlaps portions of all Forest Plan and	10%

Management Area	Goal	Overlap with Forest Plan	Percent of Project Area
	to all streams with intermittent or perennial water flow, wetlands, ponds, lakes, and adjacent unstable and potentially unstable areas.	NWFP Management Areas	

Special Area Designations

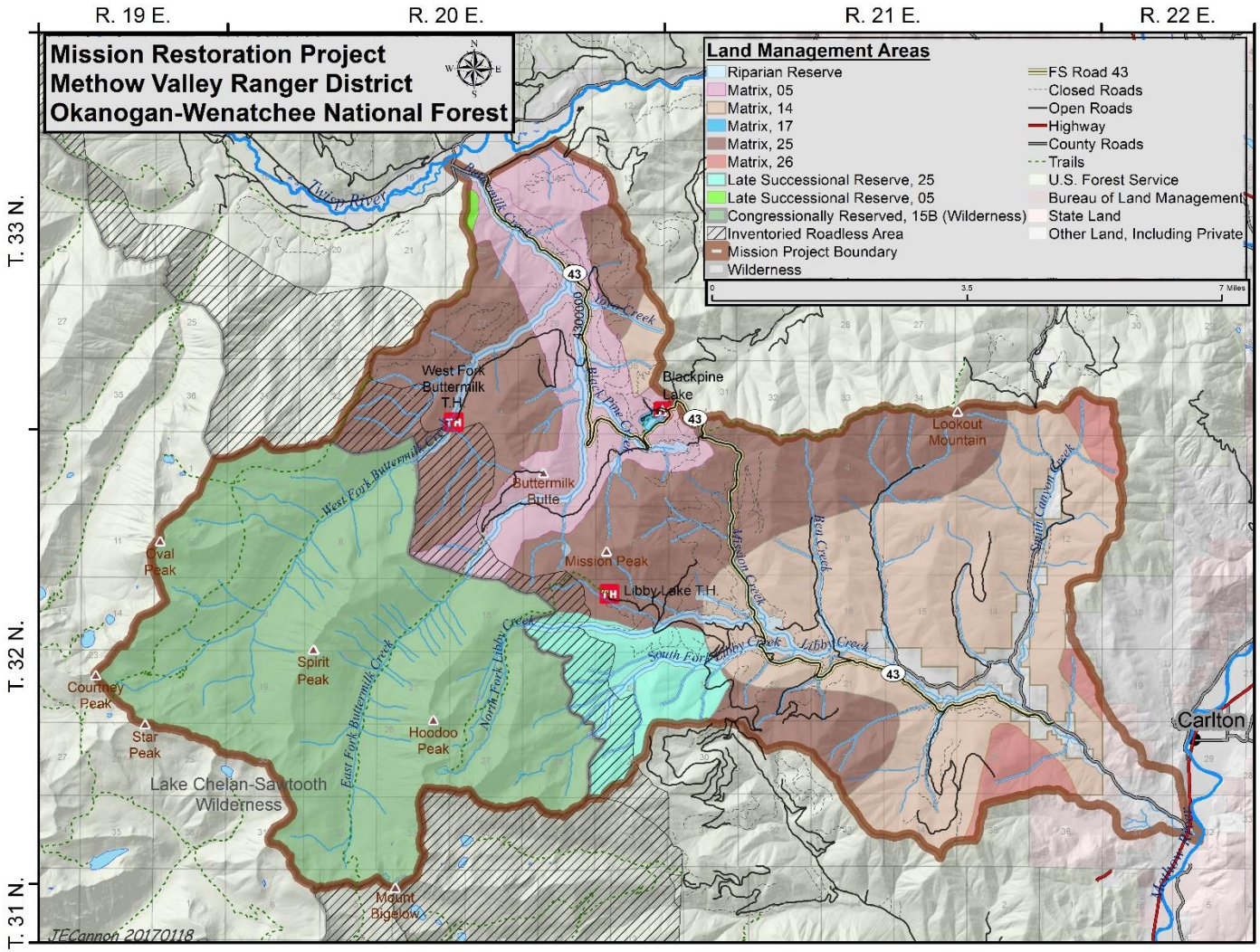
Sawtooth Inventoried Roadless Area: The project area contains approximately 3300 acres of the Sawtooth Inventories Roadless Area (IRA). Management direction for IRAs is based on the underlying Forest Plan/NWFP management area designation and the 2001 Roadless Rule (36 CFR 294), which established prohibitions on road construction, road reconstruction, and timber harvesting on 58.5 million acres of inventoried roadless areas on NFS lands. The intent of the 2001 Roadless Rule is to provide lasting protection for inventoried roadless areas within the National Forest System in the context of multiple-use management.

1.4.2 Laws, Policies, and Guidance

Several additional laws, policies, agency manual and handbook direction, and assessments informed the assessment of this project area and the development of proposed treatments. This analysis incorporates by reference the policies, recommendations, and analysis provided by these sources (detailed further in Appendix G Regulatory Framework). Some of the key sources of policy and guidance include:

- Endangered Species Act, Clean Water Act, Clean Air Act, National Forest Management Act
- Executive Orders 11990 and 11988 (protection of wetlands and floodplains)
- The 1995 Twisp River Watershed Analysis, the 1995 Libby Creek Watershed Analysis, and the 1999 Lower Methow Watershed Analysis, which evaluated historical and current conditions and listed recommendations for further management actions.
- The Okanogan-Wenatchee National Forest Restoration Strategy: adaptive ecosystem management to restore landscape resiliency (Restoration Strategy) (USDA Forest Service 2010 and 2012), which provides interim guidance for the management of large and old trees in dry and mesic forest restoration projects on the Okanogan-Wenatchee National Forest.
- The transportation network was analyzed using Travel Analysis Process guidance provided in Chapter 20 of the Travel Planning Handbook (FSH 7709.55, USDA Forest Service 2009; 36 CFR Part 212.5, Subpart A). A Travel Analysis for all roads in the project area was completed as part of Mission Restoration project analysis. The Mission Travel Analysis Report is available in the project record.
- This analysis incorporates by reference the Project Record (40 CFR 1502.21), available for review at the Methow Valley Ranger District Office, 24 West Chewuch Road, Winthrop, WA 98862.

Figure 4. Project Forest Plan and NWFP Management Areas and Sawtooth IRA



1.4.3 Relationship to Other Plans and Policies

The IDT compared the existing condition information to desired conditions that are consistent with the Okanogan National Forest Land and Resource Management Plan (LRMP) (USDA-FS, 1989) as amended, and other guidance including the Restoration Strategy (USDA-FS 2012). The relationship of this project to other laws, plans, and policies is identified in Appendix G (Regulatory Framework).

1.4.4 The Desired Condition

Based on management direction and guidance above and the EMDS tool, the desired condition for the Mission Restoration project is one in which:

- Key components of the composition, structure, and pattern of forest vegetation are within either the Historic Range of Variability (HRV), the Future Range of Variability (FRV), or moving towards them. Resiliency of mixed conifer forests is improved or maintained to disturbances including insects, diseases, and wildfire.
- Protection of life, property, critical infrastructure, and resources can be achieved within the normal risk inherent to wildland fire fighting in a light fuel loading, dry forest type. Fire hazard on National Forest System (NFS) lands within the wildland/urban interface is reduced.
- NFS roads and trails have minimal impact on water quality, water quantity, flow regimes, and on wildlife.
- Forest vegetation is resilient to a climate likely changing to a warmer condition with different moisture patterns.
- Species composition (including large-diameter broadleaf trees such as aspen), structural diversity, and natural disturbance patterns of plant communities found in Riparian Reserves are maintained or restored to provide large conifers and maintain and attain riparian management objectives such as stream shading.
- Forest composition, structure, function, and pattern are appropriate to the forest type and within the inherent range of variability. Maintain and develop sustainable vegetation and fuels conditions that limit the likelihood of losing these forest stands during wildfires and other natural disturbances.
- The current transportation system is modified to provide for long-term sustainable resource management, safe recreation use, reduced maintenance costs, and reduced impacts on aquatic habitat, wildlife habitat, and hydrological function.
- Fuel loadings are such that fire can function as a natural process on the landscape at intensities that are within the inherent range of variability.
- The Forest provides:
    - Clean water;
    - Clean air;
    - Adequate and sufficient wildlife habitat;
    - Recreation opportunities and visual quality in sensitive corridors; and

- Provides commercially valuable timber and other forest products that are economically viable and sustainable.

1.4.5 Decisions to be Made Based on this Analysis

Based on the information contained in this environmental assessment, the Forest Supervisor for the Okanogan – Wenatchee National Forest would make the following decisions:

- Does uncharacteristic wildfire pose a mitigatable threat to human life and property adjacent to and within the project area?
    - If so, what treatments would effectively reduce this threat? Are these treatments compatible with forest restoration objectives?

- Should the Methow Valley Ranger District implement vegetation management activities to restore the pattern and structure inherent to the forest type, that promotes low severity wildland fire in the dry forest type, and that improves overall forest health and sustainability in the project area through the Mission Restoration Project?
    - If so, what type of treatments would be most successful? Are treatments such as timber harvest, ladder fuels reduction, precommercial thinning, and prescribed fire the appropriate tools to move the vegetation toward a desired condition?

- Should the Methow Valley Ranger District implement mechanical vegetation treatments conducive to maintaining and promoting Threatened and Endangered species habitat?
    - If so, what type of treatments would be the most successful and how much treatment is appropriate?

- Is the road network within the Mission Restoration project area appropriate to protect the habitat needs of big game, for protection and enhancement of resources such as riparian habitat, visual quality, recreation and commercial use, and various other resource needs, objectives, and desired future conditions within the project area?

- Whether the proposed action will proceed as proposed, as modified by Alternative 3, or not at all? If it proceeds:
    - What mitigation measures, design criteria, and monitoring requirements will the Forest Service apply to the project, the effectiveness of these measures, and who/how will these measures be implemented or monitored?
    - Whether the project requires a Forest Plan amendment and if so, how will that amendment be completed?
    - Whether there is a significant effect on the human environment that would require preparation of an Environmental Impact Statement?

1.5 Consultation and Public Involvement

1.5.1 Tribal Involvement

Tribal governments have a special and unique legal and political relationship with the United States government as reflected in the United States Constitution, treaties, statutes, court decisions, executive orders, and memoranda. This relationship imparts a duty on all federal agencies to consult, coordinate, and communicate with American Indian Tribes on a government–to-government basis. Because Indian Tribes can be affected by the policies and actions of the Forest Service in managing the lands and resources under its jurisdiction, the Forest Service has a duty to consult with them on matters affecting their interests. Because of this government to government relationship, efforts were made to involve local tribal governments and to solicit their input regarding the proposed action.

A government-to-government consultation letter was mailed to the Business Council Chairman of the Confederated Tribes of the Colville Reservation, the Chairman of the Yakama Nation, and their staff on April 20, 2016. No comments or concerns were expressed by either tribe with respect to this project.

1.5.2 North Central Washington Forest Health Collaborative Involvement (NCWFHC)

Prior to initiation of the Mission Restoration NEPA analysis, the NCWFHC partnered with the Methow Valley Ranger District during its early assessment phase. During this period, discussions were held with Collaborative members regarding how they could help support the mutual goal of increasing the pace of forest restoration across the landscape. The district identified needs related to field data collection, synthesis of EMDS data outputs, and providing public forums to discuss the science behind landscape analysis and restoration. The Collaborative funded an external consultant to develop and present draft landscape prescriptions and treatment areas from initial EMDS modeling results. In addition, the Collaborative provided funding and personnel for stand data verification (completed under the supervision of the district silviculturist) and for a report on aquatic conditions (completed by a biologist working for a member organization of the Collaborative). Volunteers from the Collaborative also helped gather data on existing roads, such as location of culverts and user-created roads. The draft landscape prescriptions and treatment proposals, aquatic assessment, field verification data, and road data provided through the Collaborative's efforts were reviewed by the IDT during the initial assessment of the project area and combined with district data and expertise to develop the Purpose and Need and Proposed Action for the Mission Restoration Project.

NEPA analysis for the project began with the start of scoping in April 2016; at that time, the IDT discussed the Proposed Action with the Collaborative's Project Workgroup at their request to describe how the roads, vegetation, aquatics data, and initial treatment proposals provided by them during the pre-NEPA phase were used in the development of the Proposed Action. Once the formal NEPA process began, the Collaborative and its individual members participated in the same way as the general public. Comments received from the Collaborative were given the same weight as those received from others providing input during the scoping period.

1.5.3 Public Scoping

The Methow Valley Ranger District sent a scoping letter to the public, interested agencies, and adjacent landowners on April 28, 2016, detailing proposed management activities on 50,200 acres of National Forest System lands in the Mission Restoration Project area. As described in the scoping letter, the proposed action for consideration included vegetation management in the form of commercial timber harvest, ladder fuel reduction, pre-commercial thinning, and prescribed burning. Also included in the scoping letter were road management activities that included: road reconstruction (including culvert replacement) road maintenance, road management during harvest and post-harvest activities; and closing and decommissioning roads. The letter included a request for comments and an invitation to participate in a public information meeting about the project. A public information meeting was held on May 23, 2016.

A news release seeking comments on the Mission Restoration Project proposal was sent to the Forest's mailing list for public information contacts (newspapers and radio stations) on May 2, 2016. A news release inviting the public to the open house on May 23rd and extending the Comment Period until June 10th was released in May 2016.

A meeting was held on July 11, 2016 with the Pacific Biodiversity Institute (PBI) staff to discuss their proposed alternative. Much of the meeting provided clarification on the Proposed Action and resulted in modifying the project to increase treatments in the Wildland/Urban Interface. PBI's proposed alternative is more fully discussed in Chapter 2, Section 2.1, Alternatives Considered but Eliminated from Detailed Study. Comments from Methow Valley Citizens Council (MVCC), NCWFHC, and others were used to develop a second action alternative that placed more emphasis on aquatic restoration, particularly the road condition and density. These changes were also communicated to MVCC who also supported the need to analyze the impacts of road conditions and density on aquatic ecosystems.

1.5.4 Consultation with Other Agencies

A scoping letter was mailed to the Okanogan County Commissioners on April 20, 2016, and a briefing with the County Commissioners took place on July 13, 2016. The Commissioners raised concerns related to maintaining road access, continuing range management, promoting resilience to fire and more options for direct attach during suppression, and increasing timber management.

Informal consultation with the U.S. Fish and Wildlife Service and National Marine Fisheries Service is underway.

Via Summary Sheets dated September 29, 2016, the State Historic Preservation Officer (SHPO) concurred with the Forest Heritage Program Manager that the project had "No Historic Properties Present/No Effect".

A field trip to the project area was held in May 2016 with Dr. Amy Snover, director of University of Washington's Climate Impacts Group. Dr. Snover's input included support for considering forecasted climate impacts when considering the desired future condition of the project area and recognition that proposed treatments are consistent with those recommended for improving forest resilience to a changing climate.

Dr. Churchill from the University of Washington ran the EMDS model to help determine effects of proposed thinning and prescribed fire treatments.

1.6 Issues

Issues serve to identify the environmental effects or consequences that may occur from a proposed action and alternatives to that action. They provide opportunities during the analysis to reduce adverse effects and compare trade-offs for the decision-maker and public to understand. The concerns raised during scoping were evaluated against the following criteria:

- Was the concern beyond the scope of the project or not relevant to the action proposed? (Would a cause-and-effect relationship exist as a direct result of the Proposed Action?)
- Was the concern addressed and resolved through application of Forest Plan standards and guidelines, or applicable and appropriate best management practices?
- Can the concern be addressed and resolved through implementation of project-specific design criteria, mitigation measure associated with the Proposed Action?
- Could the concern be addressed in the effects analysis or in a specialist's report?

Issues were addressed using these methods:

- Developing, or modifying an alternative that best balances and/or resolves potential effects of the proposed action on various resources, including specific actions and design criteria; and/or
- Disclosing and comparing the relative difference in resource effects between alternatives to acceptable thresholds.

Based on comments received and internal review, the Interdisciplinary Team (IDT) identified preliminary issues for consideration in the Environmental Assessment (EA). Issues are of three types:

- Issues were used to develop, or modify alternatives, design criteria, or mitigation measures to address the effects of proposed activities.
- Issues were analyzed in terms of environmental consequences but did not lead to a new, or modified alternative; or
- Issues were not analyzed in detail because generally they were addressed through project design; were outside the scope of the analysis; were already decided by law, regulation, the Forest Plan, policy, or program; or were mitigated by standard operating procedures for the proposed actions and activities.

Figure 5. Mission Restoration Project Issues

Issue	Approach
Pacific Biodiversity Institute proposed new alternative.	Alternatives 2 and 3 were modified to include more hazard fuels reduction treatments adjacent to private lands in Libby Creek. The remainder of the proposed alternative was Considered but Eliminated from Detailed Study, section 2.1.

Increase scale of aquatic/hydrologic restoration.	The IDT developed Alternative 3 In response this issue, which proposes further aquatic/hydrologic restoration through more road clo7ure/decommissioning than those proposed in Alternative 2 as a result of the Travel Analysis Process (TAP), along with rock armoring and constructing rocked, open stream fords on some road crossings.
Increase the scale of commercial thinning to broaden restoration benefits.	The IDT found limitations on increasing the scale of commercial thinning due to slope, access, economics, and impacts to terrestrial and aquatic habitat.
Create fire breaks on the landscape, either without other forest thinning or as part of proposed thinning activities.	Some fuel breaks would be created by proposed thinning along FS Roads 43 and 4340 and in other areas in the project. In other locations, creating fuel breaks alone would not meet many of the Purpose and Needs for this project. This project proposes to treat fuels on approximately 10,000 acres of the landscape to make potential future fires easier to contain/control.
Introduce beaver to aquatic areas.	Beaver introduction is already underway in the project area as part of an existing project. Proposed beaver habitat enhancement treatments would prepare an estimated 34.6 acres in 6 locations for beaver release in connection with a current beaver relocation program, with resulting increased water storage capacity.
Do not do commercial timber harvest; only consider prescribed fire treatments	This approach would not meet the Purpose and Needs (P&N) #3, #5, or #6, and is an Alternative Considered but Eliminated from Detailed Study, section 2.1. Commercial harvest treatments move the existing stand structure towards desired conditions with more resiliency to fires than just prescribed fire treatments alone.
Only complete hand-thinning of small diameter trees.	This approach would not meet the P&N #3, #5, or #6, and is an Alternative Considered but Eliminated from Detailed Study, section 2.1. Thinning only small-diameter trees would not move the existing stand structure towards desire conditions.
Do not treat in Forest Plan old growth stands since such treatments will negatively impact old growth/Forest Plan Old Growth.	Since scoping, photo analysis and field review have clarified that Forest Plan Old Growth does not exist in any proposed thinning or prescribed fire treatment unit. Therefore, this concern does not apply to the project.
Consider an alternative that requires no Forest Plan amendments.	This is an Alternative Considered but Eliminated from Detailed Study, section 2.1 because it would not meet Purpose and Need statements #1, 3, 4, 5, and 6. Note: since initial scoping and comment periods, several of the proposed Forest Plan amendments listed in the project scoping letter and preliminary EA have been determined unnecessary including: commercial harvest of and prescribed fire in Forest Plan Old Growth; exceeding Forest Plan sediment standards in fish spawning streams; and 3) allowing temporary increases in open road density in certain Management Areas during project implementation; plowing groomed snowmobile routes; and allowing motorized access into deer winter range. The remaining proposed amendment to reduce deer winter range cover is necessary to achieve goals of the purpose and needs listed above.
Consider and implement a fire use program and stop suppression of all fires.	This is outside the scope of this project because it would require changing agency fire policy. Forest Plan amendments would have to undergo separate environmental analysis to consider this proposal.

	Consideration of this proposal would occur during a Forest Plan revision, not planning at the project level.
Do not create any new sediment and reduce sediment from the project area since it is harmful to aquatic species.	Alternative 1, No Action, would not create any new sediment from proposed project activities. Alternatives 2 and 3 are designed to decrease sediment to area streams over the long-term. Please see the description of Alternatives 2 and 3 contained in section 2.2.4. Decreasing sediment is part of P&N #1 for this project. The project contains six resource actions to address these concerns. See the Aquatic Resource section of Chapter 3 for disclosure of sediment related impacts from the project.
Eliminate and/or reduce grazing. Do not allow the project to create more grazing impacts.	The effects of livestock grazing in the project area were analyzed in the recent Libby, Little Bridge, Newby, and Poorman Allotment Management Plan (AMP) Revision (USDA 2011a). The AMP contains a comprehensive monitoring plan to ensure critical resource values are protected. Mechanisms in this plan provide for making changes to livestock management as needed. Eliminating or reducing grazing is outside of the scope of the project because current grazing activities and associated impacts are addressed in the AMP. Any impacts from treatments proposed by this project on current range management practices are discussed in the Range section (Chapter 3) and in Appendix D (Design Criteria). Some incidental transitory range (grasses and understory vegetation) would be created in the short-term from project actions, but there is no proposal to increase permitted numbers on the grazing allotment within the project area.
Create a Roadless Area around Lookout Mountain. There is a need to assess the Lookout PWA and adjacent “roadless area” for qualification as wilderness or other designation.	This is outside the scope of the project because actions of this nature are addressed at the Forest level during forest plan revision, not during smaller-scale planning projects. The effects on Wilderness, Inventoried Roadless Areas, and Unroaded/Undeveloped Character is discussed in Chapter 3 in the Other Required Disclosures section of this document.
Let the project area recover naturally; eliminate new disturbance.	Alternative 1, No Action, addresses this issue. Under the No Action alternative, new disturbances would not be approved in this Environmental Assessment. Selection of this alternative would not meet the Purpose and Need statements for this project. The effects of selecting No Action are included in the effects analysis for each resource in Chapter 3.
Focus thinning treatments only around the wildland/urban interface (WUI).	Proposed treatments in Alternatives 2 and 3 are specifically focused to reduce fire hazards in the WUI, but focusing thinning treatments solely on the WUI would not meet P&N # 1, 2, 3, 4, or 5.
Harvest in Riparian Reserves will degrade the Riparian Reserves.	Impacts to Riparian Reserves (RRs) are fully addressed in the effects analysis in Chapter 3 for the various resources and in the design criteria, mitigation measures, and monitoring for the project (in Appendix D) of the Environmental Assessment
Treatments in the Inventoried Roadless Area (IRA) will degrade the IRA.	The only treatment proposed in the IRA involves about 900’ of hand fireline and underburning about 2 acres. This treatment is needed to establish a safe underburn containment line. The effects on the Inventoried Roadless Areas and Unroaded/Undeveloped Character are discussed in Chapter 3 of this document under Other Required Disclosures.

Treatments in Late Successional Reserve (LSR) will degrade the LSR.	This issue is addressed in the Wildlife Section of Chapter 3 and in the Wildlife Resource Report in project records.
Decommission all roads at risk that can't be maintained by expected funding. Close most roads. Decommission more roads.	Alternative 3 was formed to address this issue. The effects of closing more roads than identified in the Travel Analysis Process (TAP) (which considered administration and resource needs for the present and the future) is displayed in Chapter 3. Appendix B summarizes the proposed transportation changes for this project. More specific information about road management is include in the Engineering Resource Report in project files.
Do not cut trees greater than 19" diameter at breast height (DBH).	Excluding the harvest of trees 18 inches DBH or greater would not meet P&N #3 (Vegetation Composition and Structure) and #5 (Sensitive Plants and Unique Habitats) in some instances. Limiting harvest to trees less than 18 inches DBH would not provide a cost-effective method to accomplish proposed vegetation management treatment objectives including: maintenance and restoration of large trees, reduction of conifer encroachment to promote aspen, dwarf mistletoe reduction, and promotion of preferred conifer species in treated areas. Girdling conifers ≥ 18 inches DBH to achieve vegetation management treatment objectives would not be cost-effective compared to harvesting the same trees because girdling would require an additional treatment that would be more expensive to implement than harvest and would provide no economic value to fund additional restoration treatments in the project area.
Do not implement the project until funding for road decommissioning and maintenance has been secured or develop a plan to prioritize/phase project implementation and road decommissioning (i.e. no commercial activities in Phase 2 would take place until high-priority road decommissioning in Phase 1 had taken place).	In general, road reconstruction and maintenance would be implemented at the beginning of the project as needed on all roads that would be used for timber haul. Temporary roads constructed for the project would be decommissioned soon after timber harvest on the unit has been completed. Road closure and decommissioning would be spread out over the period of the project or after completion of the project depending on where and when funding is available. The IDT Fish Biologist and Hydrologist would determine which roads are the highest priority for closure first, which may depend on the type of funding available.
The project will negatively affect air quality which can have adverse health effects and be a nuisance.	Effects to air quality are addressed in the Air Quality section of Chapter 3. Burns would not be conducted unless smoke approval is received from the Washington State Dept. of Natural Resources (DNR) for burning. Smoke would be monitored during burning activities and a burn project may be stopped if ventilation conditions deteriorate, if it is safe to do so. Some smoke impacts can be expected, especially within the first 24 hours of ignition, but these are not expected to violate National Ambient Air Quality Standards.
Public safety is at risk from logging traffic on Okanogan County and National Forest System roads.	Roads in the project area maintained by Okanogan County are outside of the scope of the project because they are not within the jurisdiction of the Forest Service. Public safety risk from logging traffic is discussed under Other Required Disclosures near the end of Chapter 3. Hauling on NFS roads on weekends or holidays would not be allowed unless approved by the recreation program manager and the sale administrator (Appendix D). Contractors and Forest Service drivers are responsible to follow agency Road Use Rules and State Laws. Some of the lower standard roads in the project area would be open only to project-related activities and not open to the public use. Most National

	Forest Service system roads proposed for commercial timber haul would either be reconstructed by the project or have pre-haul maintenance making use of these roads more safe.
Thinning would increase the carbon footprint.	This issue is discussed in the Climate Change, Greenhouse Gases, and Carbon Sequestration section, section 3.15.4, in Chapter 3 under Other Required Disclosures.

Chapter 2: Alternative Description

Chapter 2 describes the alternatives analyzed for the Mission Restoration Project and also provides readers and the deciding official with a summary of design criteria, mitigation, and monitoring (shown fully in Appendix D) and a comparison of effects of the alternatives. A description of Alternatives Considered but Eliminated from Detailed Study is also included.

2.1 Alternatives Considered but Eliminated from Detailed Study

2.1.1 Pacific Biodiversity Institute Alternative

In response to scoping, Pacific Biodiversity Institute (PBI) staff proposed an alternative calling for limiting the amount and pace of restoration treatments; increasing the amount of thinning and/or prescribed fire in the WUI and in the shrub-steppe environment in Libby Creek; thinning plantations to wide spacing; limiting thinning to hand-thinning and only up to 6" DBH; and fully developing and funding a monitoring program prior to project implementation. IDT members met with PBI staff (July 11, 2016) to discuss the intent and specifics of this alternative, and reviewed the outcome of this discussion at a full IDT meeting. The IDT modified the thinning and prescribed fire proposed in Alternatives 2 and 3 by adding 125 acres of additional treatments in the WUI where feasible. Other elements of their alternative were considered but eliminated from further study in part because of IDT concerns that:

- Increased potential for spread of invasive plants would occur with widespread burning in shrub-steppe;
- Further loss of upland deer winter range would occur through more extensive prescribed burning;
- Thinning plantations to suggested spacing would leave too few trees to develop into the desired future stand structure;
- Securing funding sources for future monitoring occurs during implementation and yearly appropriations budgeting processes and is outside of the scope of this analysis;

Hand-thinning only to 6" DBH would not achieve restoration objectives to achieve the desired amount and distribution of dry and moist forest stand structures, would have minimal effect in maintaining existing large trees in both watersheds, and would not promote development of additional large trees in Libby Creek watershed. Restricting thinning to 6" DBH or less, would not achieve silvicultural treatment objectives to reduce conifer encroachment in proposed aspen thinning units, and would not promote disease reduction treatment objectives in proposed thinning units with a "dry forest Douglas-fir mistletoe thin" prescription.

2.1.2 Do Not Close Additional Roads; Adopt all Unauthorized Roads into the National Forest System

This alternative was dropped from further consideration because it does not meet Purpose and Need #1 or #7. The ability to meet the need to reduce maintenance costs and impacts of roads on water quality, water quantity, flow regime, noxious weed spread, and wildlife habitat is predicated on considering and prioritizing each road separately for its inclusion in or removal

from the National Forest System road network. An interdisciplinary Travel Analysis Process (TAP) was used to recommend which roads to add to the system, which roads to close to most public and administrative use during and after the project, and which roads to propose for decommissioning.

2.1.3. No Commercial Timber Harvest; Non-commercial Thinning and Prescribed Fire Only

An alternative was considered that would exclude commercial thinning treatments, but still retain most non-commercial thinning treatments such as Ladder Fuel Reduction (LFR) thinning, as well as prescribed fire treatments as proposed in either Alternatives 2 or 3. This alternative would not meet the Purpose and Needs for Vegetation Composition and Structure (P&N #3) for changing vegetation structure, overstory and understory species composition, and spatial patterns in comparison to historical conditions and to improve forest resiliency to insect, disease, and wildfire events. It would not meet the Purpose and Need for Wildlife Habitat (P&N #4) for developing, maintaining, and /or enhancing habitat for federally listed and other wildlife species, increasing meadow habitat, increasing large tree habitat, and reducing the risk of large-scale habitat loss to fires by increasing resilience of habitats to wildfire. It would not meet the Purpose and Need for Sensitive Plants and Unique Habitats (P&N #5) since it would not decrease conifer encroachment in hardwood stands in the project area causing decreased nutrient, water, and sunlight availability to moonworts, bladderworts, and aspen.

2.1.4 No Forest Plan Amendments Required

Public comments received during the scoping period requested that the team provide an action alternative that did not require any temporary Forest Plan amendments for implementation. The IDT considered this alternative but decided to not fully develop it because many of the objectives of the project would be compromised to the point of being not implementable or ineffective in order to attain complete compliance with the Forest Plan. Since the scoping period, four proposed Forest Plan amendments have been deemed unnecessary as determined by further field reconnaissance and modeling. Since the release of the initial preliminary EA, another three amendments were determined to be unnecessary because the mitigations needed to protect sensitive soils by requiring winter operations could still be implemented without the amendments. The remaining proposed temporary Forest Plan amendment and its rationale is explained in section 2.3. This amendment, along with reasonable design criteria, best management practices, mitigation, and monitoring, allow for implementing the action alternatives with no significant impacts to wildlife resources. Without this amendment, the Purpose and Need for Hydrologic Function and Aquatic Habitat (P&N #1), Vegetation Composition and Structure (P&N #3), Wildlife Habitat (P&N #4), Sensitive Plants and Unique Habitats (P&N #5), and Wildfire Hazard in the Wildland Urban Interface (P&N #6) would only be partially met under this alternative.

2.2 Alternatives Developed

2.2.1 Alternative 1, No Action – Current Management Practices

Under Alternative 1, no thinning, prescribed fire, road decommissioning, road closures, culvert replacement, or road reconstruction or road maintenance by a timber sale purchaser would take place. No treatments to maintain or restore large and old trees or Riparian Reserves would occur. No treatments would occur to restore dry forest resiliency to disturbances such as wildfire and no reduction of risk through treatments would occur in the Wildland Urban Interface (WUI). Habitat in dry forested areas would continue to be at risk for uncharacteristic wildfire behavior and effects. Beaver habitat and large woody debris habitats would not be enhanced. Existing culverts would continue to block habitat continuity for listed fish species and create risks of road failure during projected storm events. The bridge across West Fork Buttermilk Creek would continue to be blocked for motorized travel and degrade further. Sediment production from the current road system would remain at high levels or increase as road conditions continue to degrade. Soil restoration activities would not occur in areas affected by past management activities. No project-related ground disturbing activities would take place and no timber would be offered for sale. Ground cover would remain at existing levels in Riparian Reserves, effectively trapping and filtering sediment in most places. Current activities permitted by previous Forest project decisions would be on-going and future activities such as routine road maintenance, firewood gathering, cattle grazing, noxious weed control, and recreation uses such as camping, horseback riding, snowmobile, and ATV use would be expected to occur.

2.2.2 Alternative 2, Proposed Action

Alternative 2 was developed from internal and external input to address the project's Purpose and Need statements. It includes commercial and non-commercial thinning; prescribed fire; closing, opening, and decommissioning roads; temporary road construction; replacing culverts; bridge replacement; enhancing beaver and coarse woody debris habitat; limited rock armoring, and soil restoration treatments. These proposed treatments are identical in Alternative 3 except for the bridge replacement across West Fork Buttermilk Creek.

2.2.3 Alternative 3, Increase Scale of Aquatic Restoration

Alternative 3 was developed in response to comments received during the scoping period that called for increasing the scale of aquatic restoration in the project area. In addition to the treatments proposed in Alternative 2, this alternative proposes further road closures and decommissioning, hardened fords, and additional rock armoring.

2.2.4 Action Alternative Treatment Summaries

Figure 6 describes the type, amount of treatments proposed in Alternatives 2 and 3 to address P&N #1-#6, except for changes in the transportation system that are described following this figure. Detailed descriptions of treatment types, purposes, and methods, and units are provided in Appendices A-C. Maps showing locations of the proposed treatments are in Appendix F. Effects of proposed treatments are discussed in Chapter 3.

Figure 6. Alternatives 2 and 3 Proposed Treatments

Treatment Type	Description	Amount	Alternative
Non-Commercial Thinning	Plantation Thin	1,703 acres	2, 3
	Wetland Thin	22 acres	2, 3
	Ladder Fuel Reduction Thin (outside of commercial thinning units)	6,458 acres	2, 3
	Post and Pole Thin	45 acres	2, 3
	Conifer Girdling & Thin for Aspen Restoration	76 acres	2, 3
	Subtotal Non-Commercial Thinning	*8,304 acres*	
Commercial Thinning	Aspen Release Thin	210 acres	2, 3
	Moist Forest Thin	75 acres	2, 3
	Dry Forest Restoration Thin	1,303 acres	2, 3
	Dry Forest Restoration – Dwarf Mistletoe Thin	284 acres	2, 3
	Variable Retention Regeneration (VRR) Thin and post-harvest tree planting	80 acres	2, 3
	Subtotal Commercial Thinning	*1,952 acres*	
Prescribed Fire	Hand-piling and pile burning	2,848 acres	2, 3
	Machine-piling and pile burning	757 acres	2, 3
	Underburning	7,363 acres	2, 3
	Landing pile burning	187 landings	2, 3
	Subtotal Prescribed Fire	*10,968 acres + 187 landings*	
Soil Restoration	Sub-soil areas of previously-compacted soil	468 acres	2, 3
Culvert Replacement	Replace culverts where fish barriers exist on fish-bearing streams	8 culverts	2, 3
	Replace culverts where existing culverts are undersized on non-fish-bearing streams	15 culverts	2, 3
Beaver Habitat Enhancement	Enhance and protect areas viable for future beaver utilization.	6 sites	2, 3
West Fork Buttermilk Bridge Replacement	Replace bridge across West Fork Buttermilk Creek to restore motorized access	1 bridge	2
Coarse Woody Debris (CWD) Enhancement	Restore deficient levels of CWD in fish-bearing stream channels.	8.2 miles	2, 3
Rock Armoring	Apply rock to road surface at stream crossings.	Alt 2: 6 stream crossings Alt 3: 33 stream crossings	2, 3
Hardened Fords	Construct rocked open fords on stream crossings	4 stream crossings	3

describe the current and post-project status of roads in the project area as proposed by Alternatives 2 and 3 to address P&N #1 and #7. See Appendix B for road-specific information of each alternative and Appendix F for maps of proposed transportation changes. The bridge across West Fork Buttermilk Creek would be replaced in Alternative 2, restoring motorized access to roads west of the bridge, and remain closed to motorized travel in Alternative 3. Both Alternatives 2 and 3 propose to construct 1.2 miles of temporary roads (9 segments of road) that would be decommissioned after use, described further in the Transportation section of Chapter 3 and on the proposed transportation changes map in Appendix F.

Figure 7 and Figure 8 describe the current and post-project status of roads in the project area as proposed by Alternatives 2 and 3 to address P&N #1 and #7. See Appendix B for road-specific information of each alternative and Appendix F for maps of proposed transportation changes. The bridge across West Fork Buttermilk Creek would be replaced in Alternative 2, restoring motorized access to roads west of the bridge, and remain closed to motorized travel in Alternative 3. Both Alternatives 2 and 3 propose to construct 1.2 miles of temporary roads (9 segments of road) that would be decommissioned after use, described further in the Transportation section of Chapter 3 and on the proposed transportation changes map in Appendix F.

Figure 7. Alternative 2 Proposed Transportation Changes

Road Type	Existing (miles)	During Project	Post-Project Status			
			Open NFS Roads	*Closed NFS Roads*	*Closed NFS Roads with Administrative Access*	*Decommissioned*
Open NFS Roads	56.7	80.6	48.6	2.6	3.2	2.2
Closed NFS Roads	62.8	38.3	4.4	29.5	9.7	19.2
Unauthorized Roads	15.7	15.7	0.7	2.7	0.2	12.1
Total	**134.6**	**135.8**	**53.1**	**34.8**	**13.1**	**33.6**

Figure 8. Alternative 3 Proposed Transportation Changes

Road Type	Existing (miles)	During Project	Post-Project Status			
			Open NFS Roads	*Closed NFS Roads*	*Closed NFS Roads with Administrative Access*	*Decommissioned*
Open NFS Roads	56.1	80.6	39.3	10.7	0	6.1

Road Type	Existing (miles)	During Project	Post-Project Status			
			Open NFS Roads	*Closed NFS Roads*	*Closed NFS Roads with Administrative Access*	*Decommissioned*
Closed NFS Roads	62.8	38.3	0.1	21.1	4.5	37.1
Unauthorized Roads	15.7	15.7	0.4	2	0.3	13
Total	**134.6**	**135.8**	**39.8**	**33.8**	**4.8**	**56.2**

2.3 Forest Plan Amendment

2.3.1 Amendments and 2012 Planning Rule

Forest Plan amendments are intended to be an adaptive management tool to keep forest plans current, effective, and relevant between forest plan revisions. The 2012 Planning Rule (Title 36, CFR, Part 219–Planning) states:

36 CFR 219.13(a) Plan amendment. A plan may be amended at any time. Plan amendments may be broad or narrow, depending on the need for change, and should be used to keep plans current and help units adapt to new information or changing conditions. The responsible official has the discretion to determine whether and how to amend the plan. Except as provided by paragraph (c) of this section, a plan amendment is required to add, modify, or remove one or more plan components, or to change how or where one or more plan components apply to all or part of the plan area (including management areas or geographic areas).

The 2012 Planning Rule further describes the amendment process as follows (CFR 219.13(b)(1)):

Base an amendment on a preliminary identification of the need to change the plan. The preliminary identification of the need to change the plan may be based on a new assessment; a monitoring report; or other documentation of new information, changed conditions, or changed circumstances. When a plan amendment is made together with, and only applies to, a project or activity decision, the analysis prepared for the project or activity may serve as the documentation for the preliminary identification of the need to change the plan.

2.3.2 Proposed Forest Plan Amendment

The project scoping letter and initial preliminary EA listed several proposed amendments for this project; since that time, IDT members determined through field reconnaissance, aerial photos, modeling results, and clarification of Forest Plan Standards and Guidelines that several proposed amendments were unnecessary because proposed treatments would be consistent with the Standards and Guidelines those amendments would have temporarily altered, or the project could be implemented with reduced flexibility without those amendments.

In this revised preliminary EA, the project proposal includes one project-specific, non-significant, temporary amendment that would allow proposed thinning treatments on 746 acres to reduce deer winter range cover to levels below Forest Plan Standards and Guidelines (S&G) to meet restoration, sustainability, forest health, and wildfire hazard reduction objectives. The amendment applies to this prescription that applies to Management Areas (MA) 14 and 26:

Management Area Prescription Wildlife MA14-6A and MA26-6A

Manage all identified deer winter range for the following well distributed cover:

Figure 9. Deer Winter Range Cover Guidance

Winter Range Cover	**MA14 & MA26**
Snow intercept Thermal	≥ 15%
Winter Thermal	> 25%
Hiding	≥ 0%
Total:	**≥ 40%**

Rationale: Since treatments covered by the proposed amendment would provide the amount of hiding cover required by standard and guideline, the discussion about the effects of the amendment are focused on the effects on the combination of snow intercept thermal and winter thermal cover.

Areas of winter range cover that would be reduced below current S&Gs contain higher tree stocking levels with more canopy closure than existed historically, with the accompanying higher risk of uncharacteristic crown fire behavior and increased vulnerability to insect outbreaks. Forested stand composition in deer thermal cover consist of a higher proportion of shade-tolerant conifers than existed historically or is predicted to exist in the future. In some aspen stands within deer thermal cover, conifers are out-competing desired aspen, resulting in the decline of this native tree species. Thinning on 746 acres of deer winter range cover as provided by this amendment would create a more open forested landscape with a less continuous layer of shade-tolerant understory trees in conifer stands, and would begin restoration toward historical and predicted future conditions with a corresponding reduction in the risk of uncharacteristic insect outbreaks and crown fire behavior and effects. Reducing winter range cover is also needed to lessen wildfire risks in the Wildland Urban Interface, decrease conifer encroachment in aspen stands to maintain plant diversity of this native tree species, and to increase the ability of vegetation to withstand impacts of a projected warmer, drier future climate. Temporarily amending this S&G would provide for commercial and noncommercial (ladder fuel reduction) thinning that would cause some adverse, mostly short-term impacts, as

well as several beneficial long-term impacts that would make the ecosystem more resilient to disturbances such as insects, wildfire, and climate.

The project area contains 12,142 acres of deer winter range in MA14 and MA26, of which 50% (6,125 acres) is in deer winter range cover (including deer winter thermal cover and snow intercept thermal cover). Commercial and noncommercial (ladder fuel reduction) thinning is proposed in approximately 50% (3,047 acres) of deer winter range cover (see Figure 10). Up to 30% of this thinning in deer winter range cover would occur using commercial thinning prescriptions, and the remaining amount would be thinned using non-commercially prescriptions (primarily using the Ladder Fuel Reduction prescription described in Appendix A). Of the acres of deer winter range cover in proposed treatment units, thinning on up to 25% (746 acres) would reduce (MA14) or further decrease (MA26) winter cover below the S&G. In the project area, MA14 currently has 52% total winter cover, and MA26 has 35% total winter cover. Post-project, both MA14 and MA26 would each have 33% deer winter range cover, a reduction of 7% below S&Gs, with an increase in forage availability in forested stands. To mitigate the reduction in deer winter range cover and to provide for adequate cover distribution across the project area, each ladder fuel reduction thinning unit would leave 20% of the unit untreated, in patches from 0.1 acre to multiple acres in size, which would limit the reduction in winter cover in these units. A review of the best available science information (BASI) on deer thermal cover is provided in Section 3.7.5.

2.3.3 Substantive Provisions Related to the Purpose of the Amendment

The 2012 Planning Rule as amended (36 CFR 219) requires that proposed amendments to the Forest Plan consider specific substantive provisions identified in the Planning Rule. The substantive provisions related to the purpose of the amendment to provide for a reduction of deer winter range cover on 746 acres are listed below, while those affected by the amendment are listed in section 3.16 of this document:

219.8 (a)(1)(iv) System drivers such as wildland fire, and climate change, and the ability of terrestrial and aquatic ecosystems in the plan area to adapt to change is related to the purpose of the amendment because reducing deer winter range cover on 746 acres is intended to affect how the project area responds to system drivers such as insects and wildland fire, as well as the ability of terrestrial and aquatic ecosystems to adapt to change;

219.8 (a)(1)(v) Wildland fires and opportunities to restore fire-adapted ecosystems is related to the purpose of the amendment because reducing deer winter range cover on 746 acres is intended to promote restoration of more historical fire behavior in dry forested areas that are primarily adapted to frequent, low-intensity fire. Thinning would also contribute to altering fire behavior in the Wildland Urban Interface.

219.8(a)(1)(vi) Opportunities for landscape scale restoration is related to the purpose of the amendment because reducing deer winter range cover on 746 acres would promote establishment of vegetation structure, species, and composition similar to historic and predicted future conditions.

219.9(a)(1) Ecosystem integrity is related to the purpose of the amendment because reducing deer winter range cover on 746 acres is intended to promote maintenance and/or restoration of historic and predicted future ecosystem structure, function, and composition;

219.9(a)(2) Ecosystem diversity is related to the purpose of the amendment because reducing deer winter range cover on 746 acres is intended to promote maintenance and/or restoration of a diversity of ecosystem and habitat types in the project area; and

219.11(c) Timber harvest for purposes other than timber production is related to the purpose of the amendment because commercial thinning is proposed to create forest vegetation structure, overstory and understory species composition, and spatial patterns that are more similar to historic and predicted future conditions, and more likely to experience disturbances (including wildfire and insects) in a manner similar to historical and future predicted disturbance patterns. Timber harvest as allowed by this amendment would contribute toward habitat diversity for terrestrial wildlife and tree species. Some timber harvest would remove conifers that are out-competing aspen in existing aspen stands. Some timber harvest would remove trees in riparian zones to promote production of hardwood vegetation to increase beaver forage, which in turn increases successful re-establishment of beaver through current beaver reintroduction program conducted by Washington state Department of Fish and Wildlife.

Forest Plan components that allow thinning for purposes other than timber production include:

- MA14-19B and MA26-19B: Limit acres burned by habitat-damaging wildfires;
- MA14-19C: Treat fuels to reduce the risk of wildfire to acceptable levels. Prescribe a level of fuel treatment to protect timber stands, wildlife values, and other resources from unacceptable losses cause by wildfire;
- MA14-20A: Scheduled and non-scheduled timber harvest shall be designed to perpetuate wildlife habitat and to address current habitat needs;
- MA26-19C: Fuels treatments, including the use of prescribed fire, shall provide, where practicable, for the retention and/or enhancement of key wildlife.

Timber harvest as provided by this amendment would provide the level of treatment to help maintain and/or restore vegetation structure, arrangement, and species composition that builds a more sustainable environment by reducing the risk of high-severity wildfire; protecting timber stands, wildlife values, and other resources; perpetuating wildlife habitat; and providing for retention and/or enhancement of key wildlife. Timber harvest, as provided by this amendment, would promote a vegetation structure and arrangement that has a reduced risk of high-severity wildfire behavior, including a greater risk of crown fire initiation and spread. These vegetation conditions are also more sustainable with the predicted wetter winter and hotter, drier summer climate and more widespread wildfire, insect, and drought disturbance regimes expected under projected climate change scenarios.

2.4 Design Criterion, Mitigation Measures, and Monitoring

Specific features, including Best Management Practices, are incorporated into the design of the Action Alternatives to prevent potential resource impacts. These criteria are an integral part of the proposed actions and the effects analyses presented in Chapter 3 are based on these measures being implemented. Monitoring would occur during implementation and to assess potential impacts caused by project activities. Depending on the impacts observed, specific mitigation measures would be implemented to reduce negative effects. Design criteria, monitoring plans, and mitigation measures are detailed in Appendix D.

2.5 Comparison of Alternatives

Figure 11 displays the resource indicators used by the IDT to analyze the effects of No Action, the Proposed Action (Alternative 2), and Alternative 3. The resource indicators are grouped by the resource analyses provided in Chapter 3.

Figure 10. Proposed thinning treatments in deer winter range cover.

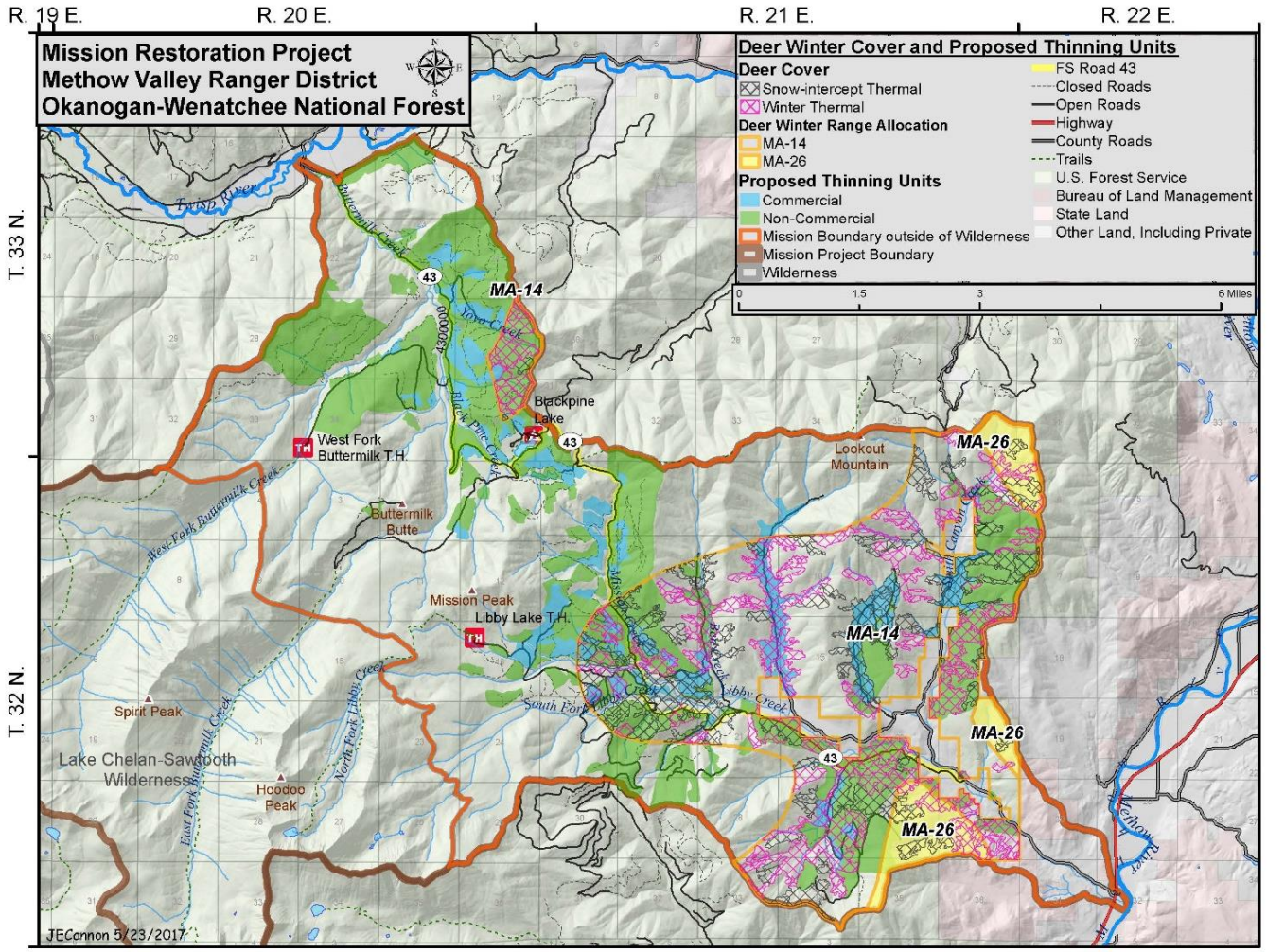


Figure 11. Comparison of Alternatives by Resource Indicator

Resource Indicator	Alternative 1, No Action	Alternative 2, Proposed Action	Alternative 3
Water Resources			
Catchment Road Density Reductions (number of catchment rankings lowered	0	5 (3 High to Moderate, 2 Moderate to Low)	8 (5 High to Moderate, 3 Moderate to Low)
Road Drainage Network Increases (number of catchment rankings lowered	0	5 (2 High to Moderate, 4 Moderate to Low)	10 (2 High to Low, 2 High to Moderate, 6 Moderate to Low)
Riparian Road Density Reductions (number of catchment rankings lowered)	0	8 (4 High to Moderate, 4 Moderate to Low)	11 (2 High to Low, 5 High to Moderate, 4 Moderate to Low)
Road-stream Crossing Density Reductions (number of catchment rankings lowered)	0	6 (1 High to Low, 1 High to Moderate, and 4 Moderate to Low)	9 (1 High to Low, 5 High to Moderate, 1 Moderate to Low)
Ground Cover (amount of bare soil)	Same as existing	+ 105 acres	+ 105 acres
Beaver Habitat Enhancement Sites	0	6 sites	6 sites
Stream Channel Complexity (CWD) Improvements (miles of restored stream)	0	8.3 miles	8.3 miles
Fish Distribution: Increased Access to Potential Habitat (miles)	0	5.6 miles	5.6 miles
Fish Distribution: number of Aquatic Organism Passage (AOP) pipes installed	0	8 AOPs	8 AOPs
Soils			

Resource Indicator	Alternative 1, No Action	Alternative 2, Proposed Action	Alternative 3
Detrimental Surface Erosion/Mass Wasting (percent of total unit)	2% (no recent mass wasting observed)	5%	5%
Compaction, Rutting, Puddling (percent of total unit)	4 – 7% average in each unit.	7 – 10%	7 – 10%
Organic Matter, Coarse Woody Material & Ground Cover (tons/acre)	Average 2 – 8 tons/acre in each unit.	5 – 20 tons/acre	5 – 20 tons/acre
Vegetation			
The amount (%) of dry and moist forest structures compared to desired range of variability (DRV)	17 of 28 forest structure categories within DRV	25 of 28 forest structure categories within or moved closer to DRV	25 of 28 forest structure categories within or moved closer to DRV
The arrangement (average patch size) of dry and moist forest structures compared to desired range of variability (DRV)	18 of 28 forest structure categories within DRV	28 of 28 forest structure categories within or moved closer to DRV	28 of 28 forest structure categories within or moved closer to DRV
Acres treated in the Buttermilk and Libby landscapes to maintain and restore large trees in patches with medium, large, or large and medium size trees.	0 acres treated	3656 acres treated	3656 acres treated
Western spruce budworm vulnerability compared to desired range of variability (DRV)	3 of 6 categories within DRV	6 of 6 categories within or moved closer to DRV	6 of 6 categories within or moved closer to DRV
Acres of treatment in forest vegetation vulnerable to Douglas-fir bark beetles	0 acres treated	7347 acres treated	7347 acres treated

Resource Indicator	Alternative 1, No Action	Alternative 2, Proposed Action	Alternative 3
Acres of treatment in forest vegetation vulnerable to dwarf mistletoe infection	0 acres treated	7846 acres treated	7846 acres treated
Fire/Fuels			
Percentage of Libby and Buttermilk landscapes in Low, Moderate, & High risk of crown fire compared to desired range of variability (DRV)	4 of 6 categories within DRV *Low Crown Fire Risk* Buttermilk = 32% (desired range 45 – 67%) Libby = 53% (desired range 41 – 67%) *Moderate Crown Fire Risk* Buttermilk = 27% (desired range 20 – 36%) Libby = 32% (desired range 20 – 36%) *High Crown Fire Risk* Buttermilk = 41% (desired range 12 – 28%) Libby = 16% (desired range of 6 – 24%)	5 of 6 categories within or moving toward DRV *Low Crown Fire Risk* Buttermilk = 39% (increased 7%) Libby = 65% (increased 12%) *Moderate Crown Fire Risk* Buttermilk = 23% (decreased 4%) Libby = 21% (decreased 11%) *High Crown Fire Risk* Buttermilk = 38% (decreased 3%) Libby = 14% (decreased 2%)	5 of 6 categories within or moving toward DRV *Low Crown Fire Risk* Buttermilk = 39% (increased 7%) Libby = 65% (increased 12%) *Moderate Crown Fire Risk* Buttermilk = 23% (decreased 4%) Libby = 21% (decreased 11%) *High Crown Fire Risk* Buttermilk = 38% (decreased 3%) Libby = 14% (decreased 2%)
Average patch size (in acres) of Libby and Buttermilk landscapes in Low, Moderate and High risk of crown fire.	2 of 6 categories within DRV *Low Crown Fire Risk* Buttermilk = 207 acres (range of 1651 – 3714) Libby = 400 acres (range of 713 – 3714 ac) *Moderate Crown Fire Risk* Buttermilk = 305 acres (range of 460 – 2073 ac) Libby = 268 acres (range of 460 – 1776 ac)	3 of 6 categories within or moving toward DRV *Low Crown Fire Risk* Buttermilk = 299 acres (Increased 92) Libby = 825 acres (Increased 425 ac.) *Moderate Crown Fire Risk* Buttermilk = 237 acres (Decreased 68) Libby = 170 acres (Decreased 98 ac)	3 of 6 categories within or moving toward DRV *Low Crown Fire Risk* Buttermilk = 299 acres (Increased 92) Libby = 825 acres (Increased 425 ac.) *Moderate Crown Fire Risk* Buttermilk = 237 acres (Decreased 68) Libby = 170 acres (Decreased 98 ac)

Resource Indicator	Alternative 1, No Action	Alternative 2, Proposed Action	Alternative 3
	High Crown Fire Risk Buttermilk = 1504 acres (range of 523 – 2125) Libby = 248 acres (range of 242 – 934 ac)	*High Crown Fire Risk* Buttermilk = 1734 acres (Increased 230) Libby = 264 acres (Increased 16 ac)	*High Crown Fire Risk* Buttermilk = 1734 acres (Increased 230) Libby = 264 acres (Increased 16 ac)
Percent of flame length by size class (in feet) in WUI.	Low = 52% Moderate = 35% High = 4% Extreme = 9%	Low = 57% Moderate = 32% High = 3% Extreme = 8%	Low = 57% Moderate = 32% High = 3% Extreme = 8%
Percent of fire behavior by type (none, surface, crown) in WUI.	None = 3% Surface = 82% Crown = 15%	None = 3% Surface = 88% Crown = 9%	None = 3% Surface = 88% Crown = 9%
Percent of flame length by size class (in feet) along Forest Road 43 and 4340.	Low = 85% Moderate = 9% High = 2% Extreme = 4%	Low = 92% Moderate = 6% High = 1% Extreme = 1%	Low = 92% Moderate = 6% High = 1% Extreme = 1%
Percentage of fire behavior by type (none, surface, crown) along Forest Road 43 and 4340.	None = 28% Surface = 61% Crown = 11%	None = 28% Surface = 69% Crown = 3%	None = 28% Surface = 69% Crown = 3%
Percent of Forest service roads greater than ½ mile in length providing access for veg/fire management would remain or be decommissioned	Remain = 100% Decommissioned = 0%	Remain = 89% Decommissioned = 11%	Remain = 69% Decommissioned = 30%
Wildlife			
Spotted Owl nesting, roosting, foraging (NRF) habitat	1,054 acres	1,022 acres (-3%)	1,022 acres (-3%)

Resource Indicator	Alternative 1, No Action	Alternative 2, Proposed Action	Alternative 3
Open road miles in nesting, roosting, foraging habitat	15.7 miles	17.2 miles post project	12.7 miles post project
Treatments in lynx habitat (early successional habitat in the subalpine fir zone) in LAUs	Spirt Mountain – 0 acres Methow Gold – 0 acres	Spirt Mountain – 5 ac. (2% treated) Methow Gold – 50 ac. (41% treated)	Spirt Mountain – 5 acres (2% treated) Methow Gold – 50 acres (41% treated)
Open roads in lynx habitat in LAUs	2.6 miles	2.6 miles post-project	2.6 miles post-project
Acres of treatments in designated critical habitat for lynx	0 acres	2,137 acres treated (17%)	2,137 acres treated (17%)
Open roads in critical habitat for lynx	9.9 miles	15.7 miles post-project	9.8 miles post-project
Goshawk suitable habitat (dense stands with large trees).	13,022 acres (38% of non-Wilderness project area)	11,712 acres (34% of non-Wilderness project area)	11,712 acres (34% of non-Wilderness project area)
Goshawk changes to suitable habitat (open road miles)	34.8 miles	40.2 miles post-project	28.0 miles post-project
Improvements to habitat for sensitive species-gray flycatcher, white-headed woodpecker, and western gray squirrel changes to suitable habitat mid-successional ponderosa pine and shrub-steppe (acres).	0 acres	1,962 acres of potential habitat improved (9% of the habitat)	1,962 acres of potential habitat improved (9% of the habitat)
Open roads in habitat for sensitive species-gray flycatcher, white-headed woodpecker, and western gray squirrel.	45.3 miles total	51.4 miles post-project	34.5 miles post-project

Resource Indicator	Alternative 1, No Action		Alternative 2, Proposed Action	Alternative 3
MA 14 winter range cover: forage ratios.	52% cover (SIT = 22%, WT = 29%)		33% cover (SIT = 10%, WT = 24%)	33% cover (SIT = 10%, WT = 24%)
MA 26 winter range cover: forage ratios.	35% cover (SIT = 16%, WT = 19%)		33% cover (SIT = 16%, WT = 17%)	33% cover (SIT = 16%, WT = 17%)
Open roads in MIS habitat for mature/old growth forest (spotted owls), winter ranger (mule deer) and lodgepole pine (lynx)	23.8 miles		21.0 miles post-project	12.2 miles post-project
Treatments in habitat for landbirds (pine, mixed conifer and deciduous/riparian habitats	Ponderosa Pine = 0 acres		8,426 acres treated (39%)	8,426 acres treated (39%)
	Mixed conifer = 0 acres		1,817 acres treated (14%)	1,817 acres treated (14%)
	Riparian = 0 acres		628 acres treated (plus 40 acres aspen) (20%)	
	Deciduous (aspen)= 0 acres		286 acres	286 acres
Transportation				
Provide the minimum road system needed for safe and efficient travel and for administration, public use, and protection of NFS lands. (Open NFS road density in discrete management areas post project)	*MA5-03*	1.64	1.74	1.70
	MA14-10	1.25	1.17	0.91
	MA17-135	N/A	N/A	N/A
	MA25-13	0.55	1.28	0.31
	MA25-14	0.53	2.41	1.45
	MA25-15	1.17	1.21	1.09
	MA26-06	0.29	0.29	0.29
	MA26-07	0.19	0.19	1.70
	ML 1	62.81	34.82	33.80

Resource Indicator	Alternative 1, No Action		Alternative 2, Proposed Action	Alternative 3
Miles of road in project area by maintenance area	*ML 2*	27.63	37.45	16.01
	ML 3	25.02	25.29	25.29
	ML 4	3.41	3.41	3.41
Botany				
Viability of occupied *B. crenulatium* habitat	Fair viability		Good viability	Good viability
Numbers of populations or individual plants	5 populations totaling 40 individuals		2 populations totaling 9 individuals	2 populations totaling 9 individuals
Acres of unique and sensitive habitat treated (aspen stands)	0 acres		280 acres	280 acres
Acres of forest canopy opened (change in amount and diversity of understory vegetation)	0 acres of forest canopy opened. Sparse or no understory in areas with closed canopy.		10,255 acres of forest canopy opened.	10,255 acres of forest canopy opened.
Range				
Acres of forest canopy opened for forage production.	0		9,782 acres	9,782 acres
Acres of soil treatments in grazing allotments.	0		98	98
Miles of road changes that limit access to riparian areas.	0		4.4	6.8
Acres of commercial harvest within or adjacent to riparian reserves.	0		78	78

Resource Indicator	Alternative 1, No Action	Alternative 2, Proposed Action	Alternative 3
Miles of NFS road changes that reduce cattle access to transitory range.	0	31 miles	54 miles
Miles of NFS road changes that reduce cattle access within the grazing allotment.	0 miles	26.8 miles	45.7 miles
Invasive Species			
Acres of Invasive Plants within Treatment Units.	243.1	243.1 existing plus 15.5 new	243.1 existing plus 15.5 new
Miles of road infested with Invasive Plants affected by proposed road changes.	62.4	62.4	62.4
Acres of soil disturbance for potential invasive species colonization	0	61 acres decommissioning (33.6 miles) Up to 200 acres – commercial thinning	102 acres decommissioning (56.2 miles) Up to 200 acres commercial thinning.
Miles of road closures/road decommissioning.	0/0	34.8/33.6	33.8/56.2
Recreation and Scenic Resources			
Visual Quality Objective (VQO) Scenic Integrity Level	Existing scenic integrity levels meet the Forest Plan Standards & Guidelines	49 Units and 16 partial units in High. 50 units and 29 partial units in Moderate. 28 units and 10 partial units in Low.	49 Units and 16 partial units in High. 50 units and 29 partial units in Moderate. 28 units and 10 partial units in Low.
Recreational access to and use of Scaffold Ridge/Oval Peak Trail	Non-motorized access only. Motorized access closed because of bridge damage; trail maintenance would not occur due to lack of motorized access.	Open for motorized and non-motorized recreational access pending bridge repair. Trail maintained after motorized access is restored.	Unmaintained route open for stock access. No further trail maintenance would occur.
Air Quality			

Resource Indicator	Alternative 1, No Action	Alternative 2, Proposed Action	Alternative 3
Tons of particulate matter at 2.5 microns (PM2.5)	0 tons	2079 tons	2079 tons
Tons of particulate matter at 10 microns (PM10)	0 tons	2243 tons	2243 tons
Economics			
Funds remaining that could be used to supplement or support other planned restoration projects	0	$310,000	$310,000